

学位論文の要旨

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Unsedated Transnasal Small-Caliber
Esophagogastroduodenoscopy in Elderly
and Bedridden Patients

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論文内容の要旨

INTRODUCTION

Unsedated transnasal small-caliber esophagogastroduodenoscopy (EGD) is often used to examine the upper gastrointestinal tract. Its efficacy for elderly and critically ill patients, however, has not been fully evaluated. To evaluate the safety of unsedated transnasal small-caliber esophagogastroduodenoscopy for their patients, the present study was done.

MATERIALS AND METHODS

One prospective randomized comparative study and one crossover comparative study between transnasal small-caliber EGD and transoral conventional (non-small-caliber) EGD was done. For the comparative study, we enrolled 240 elderly patients over 65 years old (Study 1). For the crossover analysis, we enrolled 30 bedridden patients with percutaneous endoscopic gastrostomy (PEG) (Study 2). In Study 1, we evaluated cardiopulmonary effects by measuring arterial oxygen saturation (SpO₂) and calculating the rate-pressure product (RPP: PR x systolic BP /100) at baseline, 2 min and 5 min after endoscopic intubation. In Study 2, to assess the risk for endoscopy-related aspiration pneumonia during EGD, we also measured blood leukocyte

counts (WBC) and serum C-reactive protein (CRP) levels before and 3 days after EGD.

RESULTS AND DISCUSSION

In Study 1, we observed significant decreases in SpO₂ during conventional transoral EGD, but not during transnasal small-caliber EGD (0.24% vs -0.24% after 2 min, and 0.18% vs -0.29% after 5 min, $P < 0.05$). Significant differences of the RPP were not found between conventional transoral and transnasal small-caliber EGD. In Study 2, crossover analysis showed statistically significant increases of the RPP at 2 minute after intubation and the end of endoscopy (26.8 and 34.6 vs 3.1 and 15.2, $P < 0.05$), and decreases of SpO₂ (-0.8% vs -0.1%, $P < 0.05$) during EGD with transoral conventional endoscopes in comparison with transnasal small-caliber ones. Thus, for bedridden patients with PEG feeding who were examined in the supine position, transoral conventional EGD more severely suppressed cardiopulmonary function than transnasal small-caliber EGD. Moreover, WBC count increase, from 6053 ± 1975 to 6900 ± 3392 μL ($P < 0.001$) and serum CRP values increase, from 0.93 ± 0.24 to 2.49 ± 0.91 mg/dl ($P < 0.001$) were found at 3 days after transoral conventional EGD. Thus, there were also significant increases in the markers of inflammation in bedridden patients after transoral conventional EGD, but not after transnasal small-caliber EGD performed with the patient in the supine position. Aspiration pneumonia, possibly caused by the endoscopic examination, was subsequently found in 2 of 30 patients after transoral conventional EGD.

In Study 1, we found no significant difference between transnasal and transoral endoscopy with respect to hemodynamic parameters. On the other hand, SpO₂, a measure of pulmonary function, significantly declined during transoral endoscopy, although the decreasing level is small. The small decrease of SpO₂ is not clinically important for elderly patients with a good physical condition. However, for elderly patients with cardiopulmonary diseases and resulting decreased basal SpO₂ value, further small decrease in SpO₂ is prone to induce a

serious consequence. Patients long confined to bed (including most who require PEG feeding) may become susceptible to infectious pulmonary diseases due to swallowing disturbance or micro-aspiration accompanying with possible SpO₂ decrease. For the safety in the periodic tube exchange, endoscopy-guided re-intubation of the PEG kit is recommended for these patients since a wrong replacement of feeding tube inducing a serious complication such as peritonitis has been found in some cases. This procedure requires that the patient remain supine, which increases the risk for aspiration of saliva and refluxed gastric contents. Transoral endoscopy may stimulate salivary secretion and thereby increase the risk of aspiration pneumonia. In addition, the supine position may specifically influence on hemodynamic and/or pulmonary parameters during endoscopy. We consistently found advantages in the use of the transnasal small-caliber endoscope, with respect to both hemodynamic and pulmonary parameters. Significant increases in WBC counts and CRP values, which may indicate systemic inflammatory disease, occurred only after the transoral conventional endoscopy. The transoral conventional endoscope may stimulate salivary secretion and further increase the risk of aspiration. Additionally, the oral cavity and saliva of bedridden patients with PEG feeding is prone to be infected by bacteria that may cause pneumonia. Use of the transnasal small-caliber endoscope may therefore reduce the risk for this potentially serious complication of transoral conventional EGD in bedridden patients.

CONCLUSION

Transnasal small-caliber EGD did not increase the values of inflammatory makers in critically ill patients such as bedridden with PEG feeding.